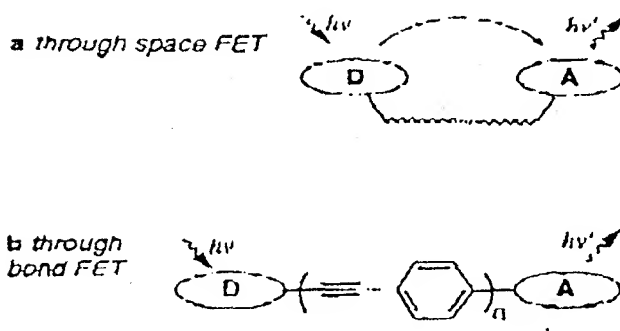
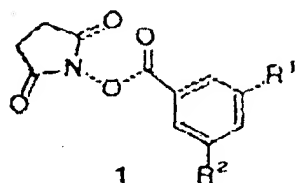


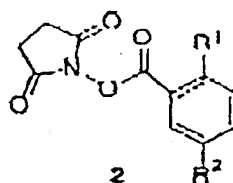
Figure 1. a Through space FET from a donor dye **D** to an acceptor dye **A**;
b through bond FET.



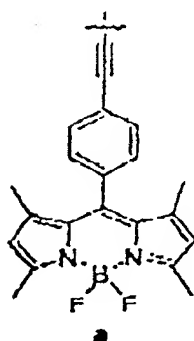
FIGURES 1A & 1B



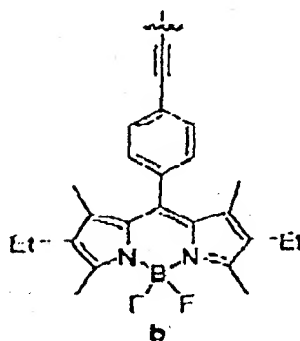
1
aa $R^1 = R^2 = a$
ab $R^1 = a, R^2 = b$



2
aa $R^1 = R^2 = a$
ab $R^1 = a, R^2 = b$

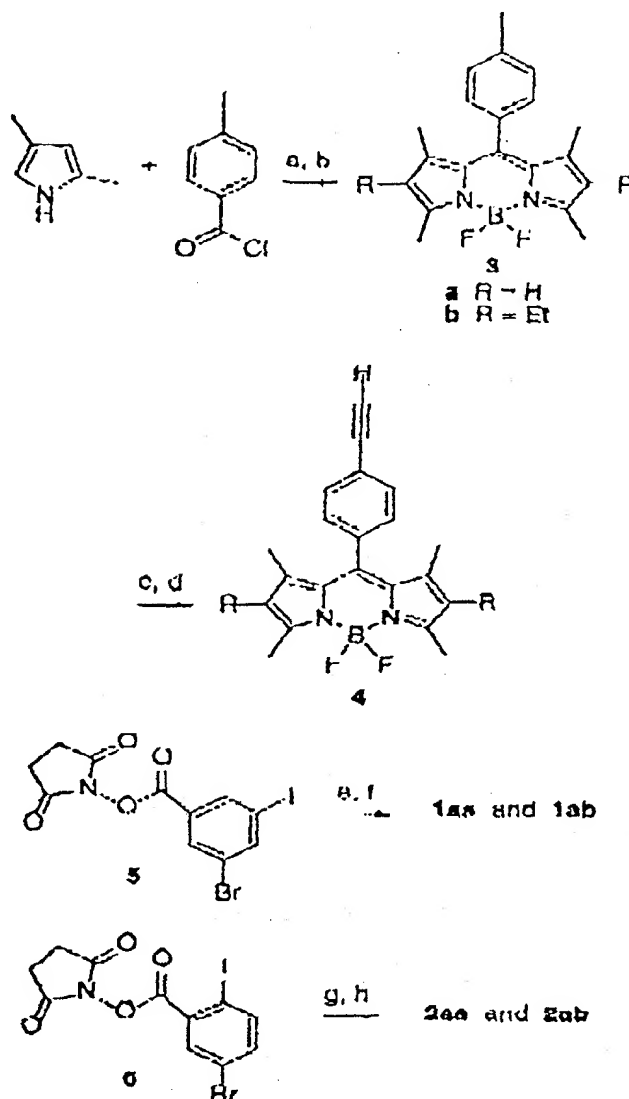


a



b

FIGURE 2



Scheme 1. Syntheses of the cassettes 1 and 2. a) CH_2Cl_2 reflux; b) $\text{BF}_3 \cdot \text{OEt}_2$, NEt_3 , MePh, 80 °C, 26% (2 steps) for 3a and 39% (2 steps) for 3b; c) HCCTMS, NEt_3 , cat. $\text{Pd}(\text{PPh}_3)_4$, cat. CuI , MePh 60 °C, 99% for a and 96% for b; d) TBAF, THF, 0 °C, 60% for a and 58% for b; e) 4a, NEt_3 , cat. $\text{Pd}(\text{PPh}_3)_4$, cat. CuI , MePh 50 °C, 96%; f) 4a or 4b, NEt_3 , cat. $\text{Pd}(\text{PPh}_3)_4$, cat. CuI , MePh 80 °C, 65% for 1aa and 23% for 1ab; g) 4a, NEt_3 , cat. $\text{Pd}(\text{PPh}_3)_4$, cat. CuI , MePh 45 °C, 83%; h) 4a or 4b, NEt_3 , cat. $\text{Pd}(\text{PPh}_3)_4$, cat. CuI , MePh 80 °C, 65% for 1aa and 17% for 1ab.

FIGURE 3

Table 1. Important spectroscopic data for compounds **4**, and the cassettes **1** and **2**.

| | λ_{\max} (abs) ^a (nm) | λ_{\max} (ems) ^b (nm) | energy transfer (ET) efficiency ^{b,c} (%) | ratios of fluorescence intensities ^c |
|------------|---|---|---|---|
| 4a | 504 | 515 | - | - |
| 4b | 529 | 543 | - | - |
| 1aa | 504 | 515 | - | 1aa:4a 1.5:1.0 |
| 1ab | 505 and 529 | 542 | >90 | 1ab:4b 2.2:1.0 |
| 2aa | 504 | 516 | - | 2aa:4a 1.6:1.0 |
| 2ab | 505 and 529 | 543 | >90 | 2ab:4b 1.7:1.0 |

[a] in CHCl₃. [b] where ET = {1 - (fluorescence intensity of donor emission in cassette)/(fluorescence intensity of donor alone)} x 100 % [c] excitation at 488 nm.

FIGURE 4